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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/537,334	03/29/2000	Alexander C. Loui	79676DMW	6591

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EXAMINER
LAROSE, COLIN M

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 03/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/537,334	LOUI ET AL.	
	Examiner	Art Unit	
	Colin M. LaRose	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-17* is/are allowed.

6)☒ Claim(s) *1-7 and 18-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 26 June 2000. These drawings are accepted.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,644,765 by Shimura et al. ("Shimura").

Regarding claims 1 and 18, Shimura discloses a method/computer program (figure 4) for detecting duplicate (i.e. substantially similar) images comprising the steps of:

providing at least two images captured at determinable times (figure 2: image 20 and database of images 33 are provided; figure 2, elements 43, 12, and 32 and column 4, lines 1-9: additional information, such as date and time of registration, is associated with each of the images);

computing an indication of image content for each image (figure 4, S17: image features relating to the content of each of the images are computed; e.g. figure 5, S30: feature extracted for image 20 and figure 3, S3: features extracted for database images 33);

determining the time of capture of each of the images (figure 4, S13: additional information (e.g. time of registration) is determined for each image); and

evaluating the indication of image content (figure 4, S18) and the time of capture (figure 4, S16) to determine whether the images are duplicate images (i.e. whether the images are substantially similar with regards to the image features and the additional features, including the time of registration).

Regarding claims 2 and 19, Simura discloses computing the image features comprises dividing each image into blocks and computing an indication of image content in each block (e.g. number of black pixels in each block). See column 3, lines 33-37.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3-7 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimura in view of U.S. Patent 6,445,818 by Kim et al. ("Kim").

Regarding claims 5 and 22, Shimura discloses the image feature comprises the number of black pixels in each block (column 3, lines 33-35). However, Shimura does not expressly disclose computing a histogram for each block.

Kim discloses a system for determining the content of an image so that an accurate search for the image can be performed. Kim teaches that a conventional method of determining an indication of the image content is to computer histograms for each block in an image. Figure 1C shows an image is first divided into blocks. Then, in figure 1D, a histogram is formed for each block, indicating the image content.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Shimura by Kim in order to compute a histogram for each block, since Kim teaches histograms are conventionally used to compute indications of image content in image blocks, and histograms are a means to determine the number of blacks pixels in each block.

Regarding claims 6 and 23, Shimura teaches comparing a block of one image (e.g. image 20), using the extracted feature, to a corresponding block of another image (e.g. an image in database 33) and using the time difference between capture of the two images to determine whether the images are duplicate images. Figure 4, S13: time information of the two images is compared; figure 4, S17: features of the two images are compared. Bother criteria are used to determine the similarity of the images.

With Kim's modification, the histograms of the two images are compared to determine similarity (column 2, lines 17-20). Kim does not expressly disclose the use of a histogram

intersection metric to compare the histograms, however, using an intersection metric to the determine the similarity of two histograms was well-known and obvious to those skilled in the art. Official notice taken.

Regarding claims 7 and 24, Shimura discloses dividing each image into a plurality of blocks and computing an indication of image content in each block (column 3, lines 33-35: the number of black pixels in each block is computed). The images (20 and 33, figure 2) utilized by Shimura are essentially foreground objects. Therefore, Shimura teaches computing said indication for foreground areas.

Regarding claims 3, 4, 20, and 21, Shimura and Kim do not expressly disclose dividing the images into 4x4, 3x3, or fewer blocks. However, at the time the invention was made, dividing an image into a small number of blocks and processing each block was common in the art and would have been an obvious modification to Shimura and Kim. Official notice taken.

Allowable Subject Matter

7. Regarding claims 8 and 14, the combination of Shimura and Kim are silent to each and every claimed feature. Specifically, Shimura and Kim are silent to

determining whether each block histogram intersection value for blocks surrounding the central area and the average histogram intersection value of the foreground are higher than respective thresholds as claimed in (d) and (f);

determining whether the number of intersection values below a threshold are not greater than a certain number as claimed in (d)

determining whether an average of the block histogram intersection values is higher than two thresholds as claimed in (g) and (h); and

computing an average histogram intersection value of the foreground area, and determining if it is not lower than a threshold as claimed in (e).

Further regarding claim 8, Shimura and Kim are silent to

determining whether the average of the block histogram intersection values is higher than a third threshold as claimed in (j); and

determining whether the time difference of capture is less than two thresholds as claimed in (i) and (k).

Claims 8-17 are allowed.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,163,622 discloses a system for determining the similarity of two images using histograms and discloses an embodiment (figure 3) wherein the images are divided into 2x2 blocks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489.

The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (703) 306-0377.

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

CML
Group Art Unit 2623
19 March 2003